

2.0 COMMON PRODUCTS—BASELINE ASA

2.1 Overview and Summary (AV-1)

The AV-1 serves two purposes. In the initial phases of the architecture development it serves as a planning guide. Upon completion of an architecture project the AV-1 provides summary textual information concerning “who, what, when, why, and how.”

Identification

Project Name: Administrative Systems Architecture

Project Architect: EPA ASA Workgroup

Organizations involved: OARM, OCFO, OEI, ORD, Region 3, Region 6

Supported by: Soza & Company, Ltd.

Project Time line: May 2002–September 2002

Purpose

The EPA Administration Systems Architecture (ASA) is a segment within the EPA Enterprise Architecture that is being developed by the Office of Environmental Information working in partnership with the Office of Administrative and Resources Management and the Office of the Chief Financial Officer. Development of the ASA began in 1999 with a high-level analysis of current administrative systems, functions, and information.

Based on the redundancies and opportunities identified in the high-level analysis, the Agency directed ASA efforts to focus on developing a single source for personnel information that is used in administrative systems. The ASA developed the Target ASA Personnel Information Architecture with five incremental options to achieve the single-source goal. The options were presented in the form of business cases.

Option One is the implementation of PeopleSoft's HR Pro to replace EPAYS in the performance of Agency personnel functions. Option Two is the integration of the Headquarters Integrated Mail Management System (IMMS) and the Agency-wide locator systems with HR Pro, making HR Pro the official source of all key “business card” information about EPA employees and non-EPA employees working on-site at EPA facilities. Option Three is the integration of HR Pro with NetWare Directory Services (now called EDirectory), to achieve improved information security by closely synchronizing network access with official personnel status. Option 4 is the integration of HR Pro with the Lotus Notes Directory, to achieve simultaneous update of locators and the Notes address book. Option 5 is the replacement of all existing interfaces from EPAYS for personnel information to interfaces with HR Pro for the same, or extended, personnel information. The impact of implementing all five options is to create a single authoritative source for personnel information in HR Pro.

Since 1999 the Agency has completed Option One. Additionally, to support the roll out of Option Two, detailed current and target business architectures and a target employee data architecture have been developed. These target environment products and recommendations have been accepted by the Agency.

The Agency now seeks to develop a target architecture for all administrative systems containing nation-wide data. The general approach will be to define business requirements first and then to identify the best possible information technology solutions for those business requirements. The Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Architecture Framework modeling techniques will be employed wherever possible, consistent with the requirements of the Clinger-Cohen Act and revised OMB Circular A-130.

The desired outcome of this project is to develop a high-level business perspective of a target ASA environment and a transition schedule. The ASA target architecture will provide the workgroup's view of the best available future environment to support the ASA business vision. The transition schedule will propose an implementation path and identify the functionality, cost and scheduling issues in following the proposed path toward a target ASA architecture that supports the ASA business vision. After the target architecture and plan are accepted by the agency, individual offices will provide the detailed architectures and implementation plans required to achieve the vision and target architecture.

Analysis: Information requirements will be gathered in work group sessions from EPA functional and systems experts. SOZA will perform initial analysis that will be validated by the work group.

Decisions: Recommendations for action will be developed by the work group and proposed to EPA management for their decision.

Expected Actions: Migration toward an approved EPA ASA environment.

Scope

- Architectural Views:
 - AV-1
 - OV-1 as-is and to be
 - OV-2 as-is and to be
 - OV-3 as-is and to be
 - SV-1 as-is and to be

Context

- **Mission:** The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment--air, water, and land--upon which life

depends.

- Vision: “...Well-integrated business processes supported by a single Agency-wide official source of accurate and timely core administrative information, easily accessible by authorized customers...”
- Principles:
 - Ensure administrative processes are well-integrated.
 - Ensure administrative systems enforce business rules, and utilize best practices.
 - Select COTS solutions that require minimal customization.
 - Collect data from logical sources, based on business rules.
 - Ensure core data elements have an identified corporate owner.
 - Ensure accurate, available and timely data.
 - Include security as a component of all systems.

Findings

- Results
- Recommendations

Tools and File Formats

- WordPerfect
- Lotus 1-2-3
- PowerPoint

2.2 Vision, Principles, and Drivers Statements

These statements identify and define the high level motivational factors that focus and drive the development of baseline and target architectures for Administrative Systems at EPA.

Vision

“...Well-integrated business processes supported by a single Agency-wide official source of accurate and timely core administrative information, easily accessible by authorized customers...”

Principles

- Ensure administrative processes are well-integrated.
- Ensure administrative systems enforce business rules, and utilize best practices
- Select COTS solutions that require minimal customization.
- Collect data from logical sources, based on business rules.
- Ensure core data elements have an identified corporate owner
- Ensure accurate, available and timely data.
- Include security as a component of all systems.
- Ensure consistency with the President's Management Agenda for E-gov projects.

Business Drivers

I. Business Drivers (General)

- Requirement for improving Information Security
- New management/management initiatives
- Need for increased efficiencies through integrated and streamlined business processes and administrative systems
- Budget availability/opportunity/constraints
- Federal and Agency legislation, policy and guidance
 - ITMRA requirements
 - Oversight actions (e.g., GAO, IG audit)
 - Electronic Government (E-Gov)
 - GPRA (Government Performance and Results Act)
 - IT architecture and standards profile
- Improved accessibility to administrative information for programmatic decision-making.

Technical Drivers

I. Technical Drivers (General)

- Increased rate of technology change increases risk due to lack of support for older computer technology, and provides opportunities to be exploited.
- Evolving Internet technology
- New technology for integrating data and systems
- Availability of COTS packages provides opportunities for improving business processes.

- Section 508
- Increasing security vulnerability

2.3 Operational Concept (OV-1)

The OV-1 is the most general of the architecture description products. Its main utility is a facilitator of human communication, and is intended for presentation to high-level decision makers. This model can also be used as a means of orienting and focusing detailed discussions. The model highlights major stakeholders, the operational nodes (organizations) that interact with these stakeholders, and defines the general scope of the ASA segment.

2.4 EPA ASA Time Model

The Major Events Timeline shows the events most significant to the ASA segment of the EPA Enterprise Architecture. The time dimension is a critical component of the Enterprise Architecture as it strongly influences project and program schedules.

The Integrated Planning and Budget Cycle Time Model is located in Appendix F.

Table 2-1. Major Events Timeline

	External	Internal		
Month		Budget	Investment Review, Contracts, Grants	Other
Jan		<ul style="list-style-type: none"> • OCFO Issue Strategic Planning Guidance • Begin Dev Budget within Agency • Exhibit 42 Submission to OMB 		<ul style="list-style-type: none"> • W2 Distribution and Pay Adjustment • Performance Appraisals
Feb	President's Budget Submitted to Congress			<ul style="list-style-type: none"> • Agency Financial Statement sent to OMB • CIO Call Letter

	External	Internal		
Month		Budget	Investment Review, Contracts, Grants	Other
Mar	House and Senate Subcommittee Hearings on Agency Budget Requests			<ul style="list-style-type: none"> • Bldg & Fac submissions provided to Office of the Administrator (OA) • Proposals to OIRM • Proposals Evaluated
Apr	House and Senate Subcommittee Hearings on Agency Budget Requests	OCFO issues Annual Budget Planning Guidance		<ul style="list-style-type: none"> • Proposals to OIRM • Proposals Evaluated
May		Agency Budget Planning Meeting	WCF IT Capital Plan Submission	
Jun		Begin Dev of OMB Annual Plan (budget) Submission	WCF IT Capital Plan Submission	
Jul		OCFO issue Straw Budget Proposal for Administrator Review and Decision	End of Year Processing for contract & Procurement (4 th Quarter)	
Aug		National Program Managers (NPM) Submit Annual Plan (Budget) to OCFO	<ul style="list-style-type: none"> • End of Year Processing for 4th Quarter • Forward Funding of Service Contracts, if Possible (OA) 	

	External	Internal		
Month		Budget	Investment Review, Contracts, Grants	Other
Sep		<ul style="list-style-type: none"> • Agency Submits Annual Plan and Budget to OMB • Heavy use of IFMS for year-end Budget Projections • Exhibit 42 Submission to OMB 	<ul style="list-style-type: none"> • Strategic Plan to OMB • Performance Measure Programs Report to OMB • End of year Processing (worst month) • Year end Procurements (IFMS) • Year end Grands and IAG Processing 	Year end Processing to Closeout FY and begin next FY
Oct	OMB Reviews and Conducts meeting with Agency on Budget	Agency Develops the Enacted Operating Plan		<ul style="list-style-type: none"> • Closeout of Postal Charges for FY (WCF - OA) • Start new Postal Accounts for FY (WCF - OA)
Nov		<ul style="list-style-type: none"> • OMB “Passback” to Agency • Agency Reclamer Process • Enacted Operation Plan to OMB and Congress 	<ul style="list-style-type: none"> • Process Annual Agreements for Contractor and Services (IFMS) • WCF Orders for Services Prepared (WCF and IFMS) 	

	External	Internal		
Month		Budget	Investment Review, Contracts, Grants	Other
Dec	White House Decides on President's Budget		<ul style="list-style-type: none"> • OMB Data Call for IR Expenditures for Previous, Current, and Next FY (IFMS) • Pay Table update • Health Benefits Open Season • Health Benefit Provider Table Update • Finance Systems Integrity Report due to President and Congress 	

2.5 Strategic Architecture

2.5.1 EPA ASA Strategic Goals

The following goals and statements are drawn from the EPA Strategic Plan, date September 2000. This subset of goals and stated intentions are directly relevant to the ASA as they serve to provide understanding of the motivation and direction that is assigned by senior management at EPA to the ASA segment of the EPA Enterprise Architecture.

Goal 7: Right to Know

The public and decision makers at all levels will have access to information about environmental conditions and human health to inform decision making and help assess the general environmental health of communities. The public will also have access to educational services and information services and tools that provide for the reliable and secure exchange of quality environmental information.

Goal 8: Sound Science

EPA will develop and apply the best available science for addressing current and future environmental hazards as well as new approaches toward improving environmental protection.

Goal 10: Effective Management

EPA will maintain the highest-quality standards for environmental leadership and for effective internal management and fiscal responsibility by managing for results.

Improved Financial and Grants Management

The EPA intends to establish world-class business processes by streamlining, improving, and automating our administrative systems to provide the best customer service at the least cost. We will use system integration tools, such as enterprise resource planning and knowledge management, to develop innovative, secure technologies that enhance business processes in financial management, payroll, human resources, grants, and contracts.

EPA benchmarked its major financial management functions against those of public and private sector organizations, including industry top performers. In comparison with other organizations, EPA devotes a smaller percentage of its workforce to financial management. However, EPA's financial management systems costs are higher than public and private sector averages. EPA plans to reduce management overhead costs of our major financial and payroll systems. We will implement a new payroll system that reduces processing costs and customer burden and initiate a long-term solution for the replacement and integration of the Agency's financial management system.

2.5.2 ASA Systems Performance Measures

Following is a list of EPA goals and the performance measures defined for systems within the ASA segment that support these goals. The organizational presentation of these systems and their goals are in concert with OMB requirements for reporting on Form 53; Financial Management, Architecture and other systems are part of EPA's Strategic goal structure.

Goal 7: Quality Environmental Information

- **E-Forms**—Decrease the administrative burden of manually completing, tracking, retrieving, filing and processing all paperwork by 50%. By year 2002, 18,000 expected users are projected.

Metrics Studies will be performed in the 2nd quarter of FY2002 and FY2004. This will provide confirmation of our proposed reduction in the administrative burden.

- **Envirofacts (EF)**—11 million successful page requests per year.

Two billion bytes of data transferred per month (April 2001).

Goal 8: Sound Science

- **OMIS**—Improvements in the process of planning, developing and tracking performance in response to GPRA requirements. This is a more accurate and efficient approach to maintaining required Agency systems by electronically passing reprogramming and expenditure data directly from OMIS thereby reducing Lab/Center/Office workload and improving the overall budget execution process.

Our goal is 85% first call resolution and 85% Help Desk Satisfaction rate by end of FY 2002.

Goal 10: Effective Management

- **HR-Pro**—By the end of FY 2001, approximately 15 of EPA's HR business processes will be streamlined and automated.

By the end of FY 2001, approximately 40 percent of HR employees will be involved in transactional HR processes, thereby freeing additional HR resources for management advisory and assistance functions.

- **ICMS**—A fully functioning interface that will allow Contracting Officers to log in ICMS actions

Additional enhancements are planned for 2002, that when completed will allow for management of more contract types, i.e., task and delivery orders. This will provide a tool for all EPA organizations to begin to use POI for contract management and oversight of mission critical activities.

- **IGOR**—As a result of audits and investigations, the Agency will improve its compliance with various environmental laws and regulations. Improved decision-making will result.

Increase access to data: Access to specific data will be available to users outside the specific functional offices. OIG will be able to make better decisions in forecasting areas of needed improvements in program offices of EPA.

Financial Management

- **BAS**—100% of Headquarters and Regional budget offices uses BAS for budget formulation and development.

Users at all levels find the system to be reliable and accurate, and are 98% satisfied with the system availability.

- **EPAYS**—To pay employees accurately and timely 95% of the time.
Reports and file access available to the customer/user community 95% of the time.
- **IFMS**—Operational 95% of the core work hours. Weekend process upon request from users.

Users find the systems to be reliable and accurate, and are 95% satisfied with the system availability.

- **SCORPIOS**—System is operational 95% of the time during core working hours.

Customers are satisfied 95% of the time measured through an analysis of hot-line calls and user interaction

- **TM**—Manually process authorizations and vouchers for 75,000 to 80,000 trips per year.

Electronically process authorizations and vouchers for 75,000 to 80,000 trips per year.

- **PRS**—The volume of correction T&A's will be reduced by 95% after the respective pay period ends. The window for input of errors will be increased because the system will be on-line and automated, thus eliminating manual preparation and mailing of hard copies to the Payroll Office for processing.

Agency employees and managers will readily have access to their personnel and organizational information 95% of the time. This reduces the burden on the Payroll Office to provide this information and generate ad hoc reports.

Grants Management

- **IGMS**—By September 30, 2002, 95% of grant funding packages from 8 of the regions and 15% of the headquarters funding packages will be submitted electronically by Agency personnel. Processing time for the paper process will be reduced by 5%.

By September 30, 2003, 100% of grant funding packages will be submitted electronically by Agency personnel. Processing time for the electronic process will be reduced by 25%.

2.6 EPA ASA Organization Architecture

The Organization chart below identifies the major organizations within EPA that own, use, and administer the administrative systems that are within the scope of the ASA segment of the EPA Enterprise Architecture.

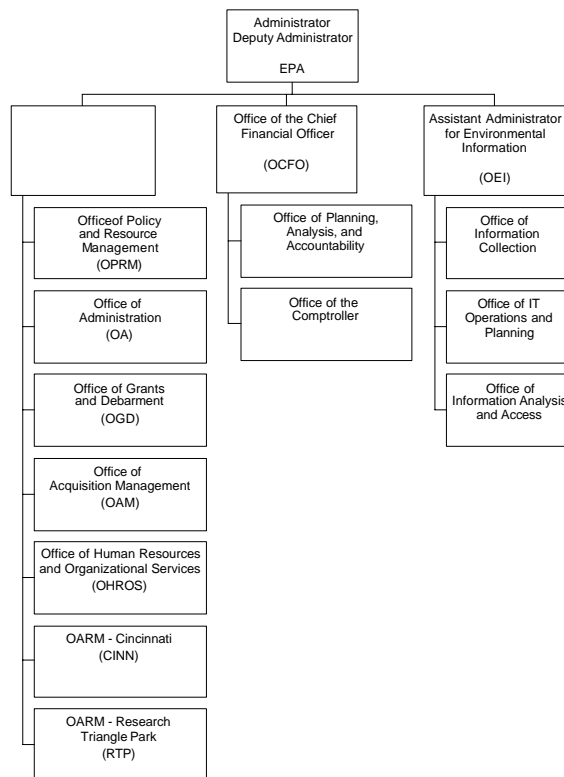


Figure 2-1. High Level Organizational Chart - ASA Segment

2.7 Business Architecture

The Business Architecture is the first level of the FEAF EPA's administrative systems Business Architecture describes the Agency's business operations in a hierarchical framework. The purpose of the administrative systems Business Architecture as illustrated in Figure 2-2 is to present a high-level view of the means by which EPA achieves its administrative goals. The Business Architecture reflects the work performed by the EPA, independent of the organizational units actually performing the work. The functional orientation of the Business Architecture facilitates identification of common business drivers, information requirements, and opportunities for re-engineering across the administrative segment rather than within the confines of an organizational stovepipe.

2.7.1 Business Functions

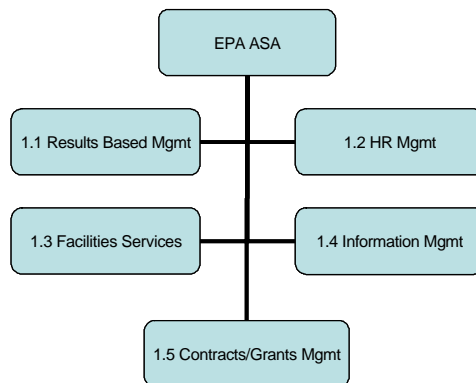


Figure 2-2. ASA Level 1 Functional Decomposition

Figure 2-2 shows the five major business functions that comprise the ASA. Each of these administrative business functions and supporting processes within the Business Architecture are described in greater detail in the paragraphs to follow.

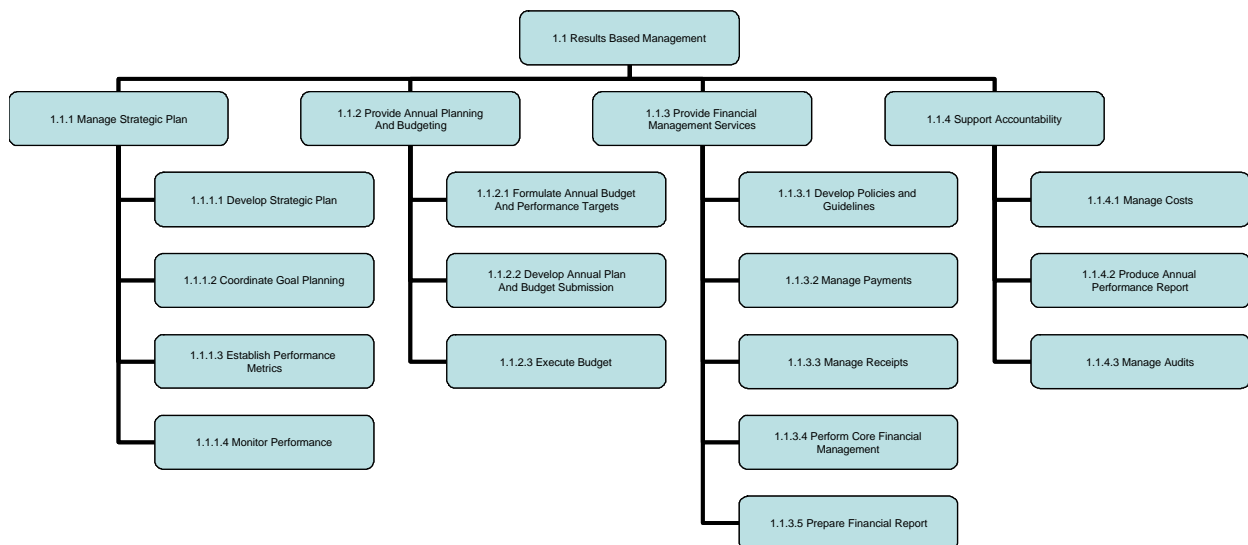


Figure 2-3. Results Based Management Functional Decomposition

- 1.1 Provide Results Based Management—Set a strategic course, plan and budget to achieve environmental results, measure progress to see if programs are working to accomplish what is needed, and make adjustments to improve performance.

- 1.1.1 Manage Strategic Plan—Establish and maintain a coordinated strategic planning process that includes goal-based budgeting, scientific and economic analysis, results measurement and accountability; and provide quality resources management policies, products and services to both internal and external customers.
- 1.1.1.1 Develop Strategic Plan—Develop a five-year strategic plan to achieve the Agency's mission to protect human health and the environment, including measurable performance goals; monitor progress in accomplishing these goals.
- 1.1.1.2 Coordinate Goal Planning—The process by which EPA programs determine what activities they will carry out year-by-year to achieve the desired environmental outcomes and how they will measure their performance. Goal planning is a dynamic, flexible process. As we work toward our long-range strategic goals, goal planning will help Agency managers make mid-course corrections based on performance feedback, program evaluations, & other information and target resources towards high-priority activities.
- 1.1.1.3 Establish Performance Metrics—Develop performance goals and milestones to measure results, a systematic and comprehensive method to monitor results, and an oversight structure to develop and monitor corrective actions.
- 1.1.1.4 Monitor Performance—Monitor progress in accomplishing the goals developed in the five year strategic plan to achieve the Agency's mission performance goals and milestones developed in the establishment of the performance metrics.
- 1.1.2 Provide Annual Planning and Budgeting—Break EPA's long-term goals into annual increments of progress; determine the resources needed to accomplish these annual results; develop the annual plan and budget; work with OMB and Congress to enact the budget; translate enacted budget into an operating plan; monitor ongoing activities and take corrective actions as appropriate.
- 1.1.2.1 Formulate Annual Budget and Performance Targets—Define program priorities, goals, and objectives for the upcoming budget year and funding necessary to accomplish these goals and objectives.
- 1.1.2.2 Develop Annual Plan and Budget Submission—Prepare Annual Plan and Budget Submission for incorporation into the President's Budget; work with OMB and Congress during the annual appropriations process.
- 1.1.2.3 Execute Budget—Develop details to implement the Enacted Budget in each Program Office and Region; adjust goals and objectives as necessary to reflect approved funding.

- 1.1.2.3.1 Develop Operating Plan—Program and regional offices prepare their operating plans - breaking out the budget resource categories into more detail spending categories (Personnel Compensations and Benefits, Travel, WCF, Contracts, Grants, IAGs, Other Expenses, etc) and down to lower levels of the organizations (Allowance Holders, Responsibility Centers, etc).
- 1.1.2.3.2 Maintain Operating Plan—Program Offices make adjustments to their operating (spending) plan as necessary throughout the year. In some cases they will need to submit changes to the operating plan via IFMS reprogramming requests to Annual Planning and Budget Division for approval before they can move resources between programs, organizations, etc. APBD and program offices may also need to make adjustments to the annual spending plan based on agency-wide (cuts, taps, etc) changes.
- 1.1.3 Provide Financial Management Services—Ensure that financial transactions are made, recorded, and reported properly and timely; develop reports to document activities; manage financial information systems; maintain cooperative partnerships with state, local, and tribal governments to fund environmental needs.
- 1.1.3.1 Develop Policies and Guidelines—Develop and maintain sound financial management and accounting policies and procedures; improve existing policies and procedures for cost accounting; ensure that policies are consistent with current laws, rules, OMB circulars, accounting standards.
- 1.1.3.1.1 Manage Environmental Finance Program—Coordinate the Environmental Financial Advisory Board, the Environmental Financing Information Network, and the Environmental Finance Center Network to help communities meet environmental needs.
- 1.1.3.2 Manage Payments—Provide appropriate control over all payments made by or on behalf of an agency. The agency makes payments to vendors in accordance with contracts; to state governments under a variety of programs; to employees for salaries and expense reimbursements; to other federal agencies for reimbursable work performed; to individual citizens receiving federal benefits; to recipients of federal loans; and for many other reasons.
- 1.1.3.2.1 Provide Fiscal and Accounting Services—Ensure that Agency payments are timely and correct; develop procedures for timely collection of receivables; record transactions properly; increase the use of electronic transactions to replace paper checks.
- 1.1.3.2.2 Manage Payments for Goods and Services—Make timely and correct payments to contractors, vendors, and others, including payments on the Agency's Bank Card; take maximum advantage of prompt payment discounts and rebates; comply with government wide

requirements for prompt payment.

- 1.1.3.2.3 Manage Payments to EPA Staff—Ensure that Agency payroll is timely and correct; promptly incorporate legislative and other changes affecting payroll including changes to federal, state, and local tax requirements; implement employee initiated changes affecting pay; reimburse travel expenses correctly and promptly.
- 1.1.3.3 Manage Receipts—Record agency cash receipts, including servicing and collecting receivables. Receivables are established to account for amounts due from others as the result of services performed by the agency, delivery of goods sold, the passage of time, loans made to others that must be repaid, or other actions.
- 1.1.3.3.1 Manage Programmatic Transactions—Make timely and correct disbursements to grant recipients; manage receivables from, and payments to, buyers and sellers of air pollution allowances; implement sound oversight, billing and collection procedures to collect fines, fees, loan repayments, Superfund cost recovery, and other monies due the Agency; refer delinquent receivables to Treasury or Justice as appropriate.
- 1.1.3.3.2 Manage Interagency Agreements—Maintain oversight and controls; make and record payments and disbursements correctly and timely; work closely with trading partners.
- 1.1.3.4 Perform Core Financial Management—Operate and maintain the core system consistent with established financial and related laws, regulations, government-wide policy, and best practices. These processes set the framework from which all other Core financial management ensures that the procedures for capturing, classifying, communicating, processing, and storing data and transactions are uniform or can translate among various sub-systems as necessary.
- 1.1.3.4.1 Maintain Financial Information Systems—Acquire, develop, and maintain systems to record, process, and report on financial functions and activities; meet applicable requirements for system operations and security.
- 1.1.3.5 Prepare Financial Report—Prepare timely and useful information to support: the managements fiduciary role; budget formulation and execution functions; fiscal management of program delivery and program decision making; and internal and external reporting requirements.
- 1.1.3.5.1 Report Commercial Activities—Develop EPA's annual report to OMB on commercial activities required under the Federal Activities Inventory Reform Act (FAIR Act) and OMB Circular A.
- 1.1.4 Support Accountability—Develop and implement a process for analyzing and reporting

performance and resource information internally and for stakeholders.

- 1.1.4.1 Manage Costs—Measure the full costs of programs, and their various elements, activities, and outputs. Cost Management is essential for providing accurate program measurement information, performance measures, and financial statements with verifiable reporting of the cost activities. This process includes cost setup and accumulation; cost recognition; and cost distribution.
- 1.1.4.1.1 Maintain Working Capital Fund—Maintain the Working Capital Fund; ensure that Fund charges accurately reflect the costs of providing services; properly account for transactions.
- 1.1.4.2 Produce Annual Performance Report—Produce the Annual Report to document Agency activities and performance; document performance results for each of EPA's ten goals; address management accomplishments and challenges; develop Agency financial statements; maintain supporting documentation; work with the Inspector General to resolve potential audit issues and obtain unqualified audit opinions.
- 1.1.4.2.1 Measure Accountability—Measure and report performance results; measure results against the goals and objectives in the Annual Plan.
- 1.1.4.3 Manage Audits—Track audit recommendations and issues raised by the Office of the Inspector General; work with the Inspector General to resolve potential audit issues and obtain unqualified audit opinions; ensure that appropriate actions are taken in a timely fashion.

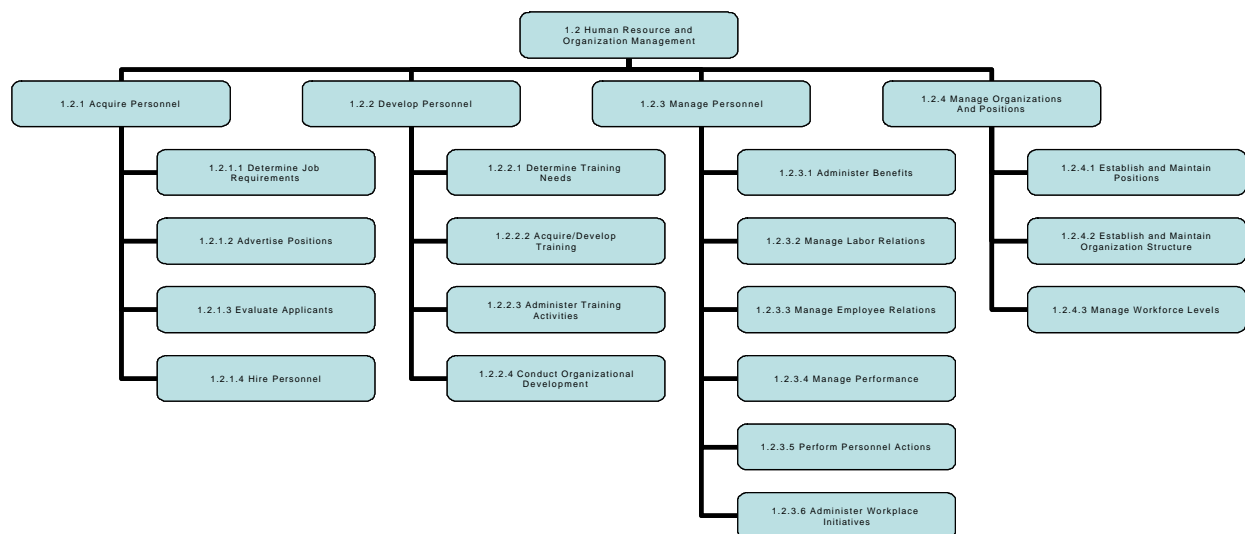


Figure 2-4. Human Resources and Organizational Management Functional Decomposition

- 1.2 Provide Human Resource Management and Organization Services—Conduct human resource and organizational processes that: 1) define and establish organizational workforce requirements; 2) develop and maintain organizational policies, procedures and guidance; and 3) recruit, hire, train, deploy and retain people to accomplish the Agency's mission.

Goals:

- Having the right person in the right place at the right time.
- Maximizing the capacity of each employee
- Assuring compliance with Federal employment laws and regulations.
- 1.2.1 Acquire Personnel—The process of identifying and attracting qualified individuals to fill specific positions within the organization.
 - 1.2.1.1 Determine Job Requirements—Assess knowledge, skills and abilities needed to perform specific duties and tasks.
 - 1.2.1.2 Advertise Positions—Publish job requirements and application procedures to solicit interest from potential candidates.
 - 1.2.1.3 Evaluate Applicants—Review applicant qualifications against job requirements to determine eligibility and relative rankings. Includes review of applications and personal interviews.
 - 1.2.1.4 Hire Personnel—Select best qualified individual(s). Make official offer of employment and confirm acceptance. Initiate hire transaction.
- 1.2.2 Develop Personnel—The process of conducting activities to increase employee skills and competency levels as needed to enhance their productivity and value to the organization.
 - 1.2.2.1 Determine Training Needs—Assess competencies required for performance of Agency work and for accomplishing specific job requirements.
 - 1.2.2.2 Acquire/Develop Training—Design or procure training activities based on identified training needs.
 - 1.2.2.3 Administer Training Activities—Arrange for delivery of training activities in support of identified needs. Process includes requesting, approval, registration, and scheduling.
 - 1.2.2.4 Conduct Organizational Development—Develop and administer interventions and

assessments to increase organizational effectiveness and efficiency.

- 1.2.3 Manage Personnel—The process of performing personnel actions and managing labor relations, staff performance, and workplace initiative.
- 1.2.3.1 Administer Benefits—Administer processes and services to ensure that employees can obtain available benefits. This includes:
 - Conducting Open Seasons (Health/Life/Retirement)
 - Administering Ongoing Enrollments for Health/Life/Retirement
 - Promoting Employee Awareness
- 1.2.3.2 Manage Labor Relations—Establish and maintain processes and forums for partnerships, negotiations and dispute resolutions between unions and management. This includes:
 - Coordinating Labor/Management Partnerships
 - Administering Grievance Process
 - Conducting Negotiations
 - Maintaining Bargaining Unit Information
- 1.2.3.3 Manage Employee Relations—Administer processes and services to assist employees and managers with resolution of individual employment related issues and problems. This includes:
 - Managing Administrative Grievance Process
 - Administering Worker's Compensation Program
 - Conducting Employee Counseling and Interventions
 - Managing Drug Testing
 - Administering Alternative Work Space
- 1.2.3.4 Manage Performance—Administer a process to provide for the review, assessment and acknowledgment of employee accomplishments and performance in meeting specific job requirements. This includes:
 - Establishing Performance Review Process
 - Administering Incentive Awards
 - Processing Disciplinary Actions
- 1.2.3.5 Perform Personnel Actions—Submit, receive, accept and perform the requests for actions that officially change the status of employees. Maintain the official record of personnel action. This includes:

- Input of Transaction Information into Personnel/Payroll System
- Maintaining Official Personnel Records
- 1.2.3.6 Administer Workplace Initiatives—Manage programs and activities to provide added workplace and employment flexibility and incentives for employees. This includes:
 - Establishing Flexi-place/time Policies
 - Conducting Leave Bank Program
- 1.3 Provide Facility, Health and Safety Related Services—The provision of basic services for day-to-day operations. Services include but are not limited to the following: Facility acquisition, planning, management and maintenance; Security; Mail, Photocopying, Property; Safety, health and environmental management program policies, management and administrative systems; and Transportation management.

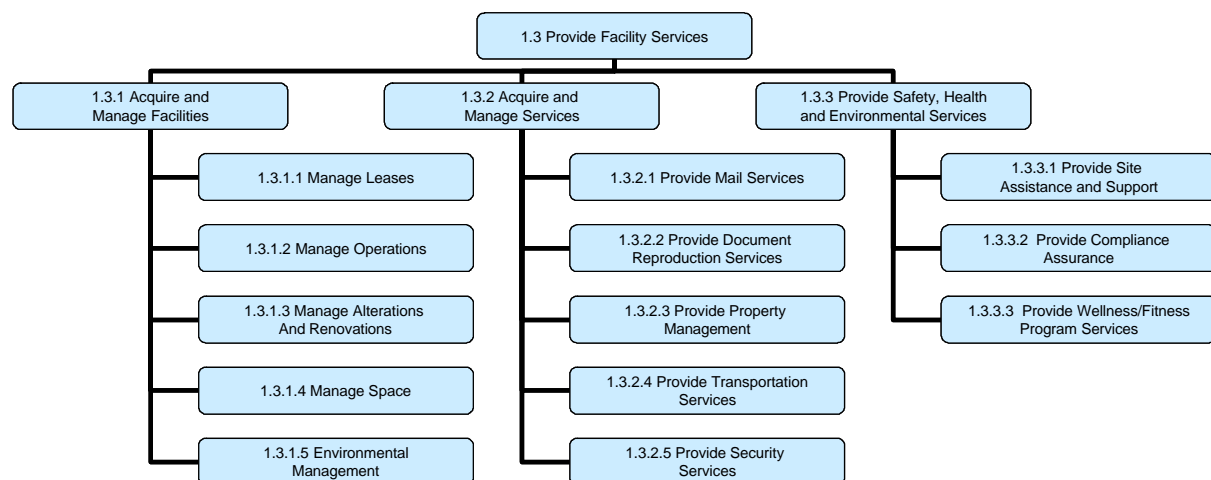


Figure 2-5. Provide Facility and Facility Related Services Functional Decomposition

- 1.3.1 Acquire & Manage Facilities—Manage the acquisition of facilities that include, design, layout, construction, lease and own agreements.
- 1.3.1.1 Manage Leases—Work with Building Owners to ensure proper lease agreements are in place and that agreements are renewed or closed out properly.
- 1.3.1.2 Manage Day-to-Day Operations—Respond to all requests dealing with repair and

upkeep of existing space within Agency buildings. Function as a clearinghouse for all facilities services requests relative to building operations and maintenance. Requests may deal with temperature, plumbing, trash pick-up, cleaning, smell, pest management and elevators.

- 1.3.1.3 Manage Alterations & Renovations—Coordinate projects related to the repair and improvement of government owned and leased space in support of agency's mission. This includes furniture acquisition and maintenance.
- 1.3.1.4 Manage Space—Coordinate all internal and external requirements to successfully complete office moves and relocations to minimize cost but ensure customer satisfaction.
- 1.3.1.5 Environmental Management—Coordinates efforts within EPA Nationwide to implement pollution prevention initiatives at EPA owned or leased facilities. Responsible for EPA's Energy and Water Conservation Program. Pursues public-private partnerships to gain knowledge, impart knowledge and encourage the use of innovative technology when planning, developing and implementing conservation measures and concepts in its facilities, or when participating in projects carried out by others.
- 1.3.2 Acquire & Manage Services
- 1.3.2.1 Provide Mail Services—Manage collection and distribution of packages and mail as it enters and exits the Agency.
- 1.3.2.2 Provide Document Reproduction Services—Provides photocopy centers for staff. Also provides procurement of Government and commercial printing services. In-House printing services include Photocopying, use of Docutech System, Color photocopying and Offset Printing, Outside Procurement Services can be used for Publications, Booklets, Pamphlets, envelopes, Newsletters, Letterhead, Notepads etc.
- 1.3.2.3 Provide Property Management—Develop and administer standards for acquisition, use, disposal and transfer of capital equipment. (need to add definition for operational side of property management)
- 1.3.2.4 Provide Transportation Services—Provide services in the support of transporting EPA employees and contractors between EPA buildings. Provide subsidized parking and commuting cost for Agency employees. Support National Motor Vehicle Initiatives.
- 1.3.2.5 Provide Security Services—Management of physical security throughout Agency. Responsible for Occupant Emergency Plans for facilities as well as national emergency preparedness. Ensure compliance with applicable Federal statutes and regulations, including

those relating to National Security Information. Responsible for providing oversight and control of National Security Information (NSI) in the custody of EPA.

- 1.3.3 Provide Safety, Health and Environmental Management Services—Establish and develop internal safety, health and environmental management program policies, management and administrative systems, program models, and operating policies that address the mission-oriented activities throughout the agency at offices, laboratories, field sites, research vessels, and diving operations. Provide assistance and support for the evaluation of working conditions and resolving occupational and environmental risks/hazards including strategies to reduce the agency's internal use of chemicals and its volume of hazardous waste. Conduct on-site investigations, audits and program evaluations of current space as well as new construction, renovation, lease and closure plans to determine compliance with statutory and regulatory mandates. Help develop, and monitor, corrective actions for program weaknesses. Manage the Headquarters Safety, Health and Environmental Management Program (SHEMP), including the wellness center, health unit, and activities of the Labor/Management SHEMP inspection team.
- 1.3.3.1 Provide Site Assistance and Support—Provide strategies for the protection of EPA workers in the areas occupational health, industrial hygiene and safety. Conduct feasibility studies of engineering and administrative controls for the workplace environment, hazardous agents and environmental compliance. Prepare risk assessments for the activities of EPA field employees and laboratory workers.
- 1.3.3.2 Provide Compliance Assurance—Conduct on-site audits and program evaluations of organizational units, sites and activities to determine compliance with statutory and regulatory mandates. Provide assistance in the development and monitoring of corrective action plans for program weaknesses. Perform special investigations and studies for fatalities, injuries/illnesses and complaints, and for environmental releases.
- 1.3.3.3 Provide Wellness/Fitness Program Services—Manage fitness and health unit services supporting EPA Headquarters employees.
- 1.4 Provide Information Management—Provide information technology/management support for business processes, to include planning, policy, engineering and support.
- 1.4.1 Perform Investment Planning & Measurements—Review process for major Agency IT investments to occur based on a 7-year period, in response to ITMRA. ITMRA requires Agencies to review major IT investments to ensure alignment with Agency goals.
- 1.4.1.1 Develop Proposal Form—Develop guidance, issue to program office, and collect

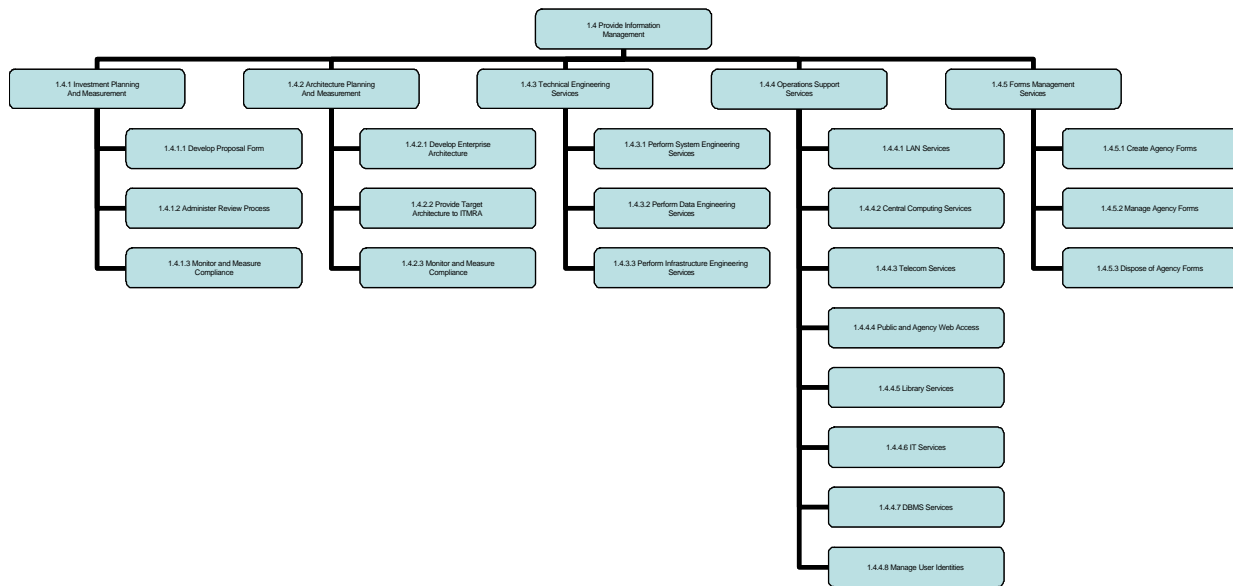


Figure 2-6. Provide Information Management Functional Decomposition

proposals.

- 1.4.1.2 Administer Review Process—Evaluate proposals for completeness. Proposals are evaluated internally within OEI (peer review), followed by an Agency level review (CFO/CIO).
- 1.4.1.3 Monitor & Measure Compliance—Monitor activity, ensure adherence to Federal Requirements, and monitor and report on performance.
- 1.4.2 Perform Architecture Planning & Measurement Services—Develop an Agency Enterprise Architecture, to include a target architecture.
 - 1.4.2.1 Develop Enterprise Architecture Plan—Develop an Agency Enterprise Architecture that complies with Federal requirements, can be integrated within the Federal Architecture, and addresses EPA's emerging business needs.
 - 1.4.2.2 Provide Target Architecture to ITMRA—Provide the target Architecture as an input to the ITMRA process to aid proposal developers in responding to agency architecture changes.
 - 1.4.2.3 Monitor & Measure Compliance—Monitor Agency adherence to the Enterprise

Architecture, define measurements and measure results.

- 1.4.3 Perform Tech Engineering Services—Perform Analysis, Design, Development, and Implementation of technical solutions consistent with the Agency Enterprise Architecture.
- 1.4.3.1 Perform System Engineering Services—Perform Analysis, Design, Development, Implementation and Operations & Maintenance of technical solutions for Agency systems.
- 1.4.3.2 Perform Data Engineering Services—Perform Analysis, Design, Development, Implementation, and Operations and Maintenance of technical solutions for Agency data.
- 1.4.3.3 Perform Infrastructure Engineering Services—Perform Analysis, Design, Development, Implementation, and Operations & Maintenance of technical infrastructure solutions to support CIO decisions regarding the Agency major architecture initiatives. Maintain the IT Architecture Road Map. Perform IT Infrastructure capacity planning.
- 1.4.4 Perform Operations Support Services—Perform day-to-day operations and maintenance support functions for Agency systems, data, and major infrastructure components.
- 1.4.4.1 Perform Agency LAN Services—LAN system administration and desktop support, including maintenance and enhancement activities.
- 1.4.4.2 Perform Central Computing Services—Provide mainframe, supercomputer, & central client-server computational services and support.
- 1.4.4.3 Perform Telecom Services—Provide agency voice, data and video connectivity, including basic telephone service, long distance services, Gov Phone Card, Local Area networks, metropolitan area networks, wide area networks, and Internet/Intranet services/access. This support includes planning, budgeting, acquiring, installing, maintaining and operating the telecom networks.
- 1.4.4.4 Provide Public and Agency Web Access—Operations of the Agency's public and intranet web sites (Agency Webmaster).
- 1.4.4.5 Provide Library Services—Operate agency libraries providing traditional library functions such as access to journals, periodicals, literature searches and online library subscriptions.
- 1.4.4.6 Provide Information Technology Security Services Operate Agency Information

Technology Security and Access systems for Information Technology Systems Networks, and Application Access (TSSMS, Notes Directory, NDS, RACF) (Needs a definition). Perform those tasks necessary to protect information assets from unauthorized access, corruption or loss of data, and ensure high availability of information resources.

- 1.4.4.7 Perform DBMS Services—Provide database administration and management services for agency DBMS, including backup and recovery, security administration, storage management, performance tuning, data administration, and installation and upgrade services.
- 1.4.4.8 Manage Internal Identity of All Users in EPA—The management of system users at EPA. It is fundamentally the process of enabling and controlling user access to information, and includes creation and management of user system accounts, control of user access and maintenance of aliases, creation and management of user groups and roles, and the granting and revoking of permissions to access information.
- 1.4.5 Perform Forms Management Services—Ensure use of standard Federal and Agency forms to support effective record keeping. Ensure that Federal standard forms are available and used as appropriate to support Federal record keeping requirements.
- 1.4.5.1 Create Agency Forms—Design and approve forms that support key Agency repetitive business processes and ensure that all information needed to document such processes can be collected using the approved form.
- 1.4.5.2 Manage Agency Forms—Ensure economic duplication and supply of Agency forms sufficient to support the transaction of Agency processes. Keep a catalog of current Agency forms.
- 1.4.5.3 Dispose of Agency Forms—Ensure that obsolete forms are retired and excess supply of obsolete forms is disposed.

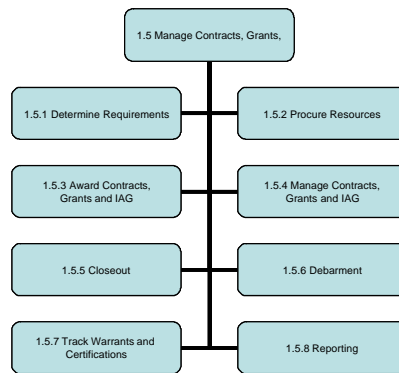


Figure 2-7. Provide Contracts, Grants, and IAG Management Functional Decomposition

1.5 Provide Contracts, Grants, and IAG Management

- Provide the functions to allow outside individuals to assist EPA with accomplishing its mission.
- Receive Grant Application from Public (Grants)
- Receive Contract Requirements from the Program Offices (Contracts and Interagency Agreements)
- Receive Funding Package or PR from Program Office for Grants, Contracts, and Interagency Agreements
- Enter Grants Application Information in System or receive it electronically
- Capture Contract Information in the System and create RFP and contract
- Grant Specialist or Contract Officer Reviews Information
- Decision Process between Program Office and Grants or Contracts Office
- Post the Request for Quotes/Proposals (Contracts)
- Evaluate Quotes/Proposals of Grant, Contract, or Interagency Agreement
- Award Contract or Grant
- Post Award Management of Grant or Contract
- Closeout
- Reporting Requirements to EPA, the Public, and other Agencies
- Reporting and Monitoring Customer Service Standards

The sub-processes defined below apply in whole or in part to the following eight Acquisition Business Processes: Simplified Acquisition Process, Large Contracts Process, Post Award Contract Modification Process, Post Award New Work Assignment Process, Receiving, Inspection, and Acceptance Process, Invoicing and Payment Process, Contract Closeout Process, and Purchase Card Process.

- 1.5.1 Determine Requirements—Evaluate the applicant scope of work in relation to regulations to determine acceptability of grant application. Work with Program Office to define requirements for purchase or service. Review SOW to determine which regulations and policies are applicable and to determine if activity has been authorized by legislation. Ensure appropriate documentation submitted by Program Office – needed to determine type and length of contract, etc.
- 1.5.2 Procure Resources—Credit card purchase, simplified acquisitions (under \$100k) or award of a contract for any amount and multiple years. EPA will award a Contract or Purchase Order for items and/or services. Place orders for supplies/services under GSA Federal Supply Schedules and Government Wide Acquisition Contracts (GWACS).
- 1.5.3 Award Contracts, Grants, & IAG—Prepare award documentation with proper signatures and financial obligations. Perform multi-level reviews of documentation, as appropriate, prior to award. Assure that only authorized persons sign award and financial documents.
- 1.5.4 Manage Contracts, Grants, & IAG—Monitor the post award responsibilities and eventual closeout procedures. Prepare modifications for funding or any change in the project that remains within the scope of the Contract or Grant. Process Work Orders (Task/Delivery Order or Work Assignment) for supplies or services under awarded contracts. Perform post-award monitoring to assure compliance with grant agreements and regulations. Perform periodic manual reconciliations with Contract Payment System. Review and approve contractor invoices. Provide grantees with mechanism for drawing down grant funds.
- 1.5.5 Closeout—Receive and review the final reports/products from the grant, contract, interagency agreement. Approve reports and officially close the grant, contract, or interagency agreement in the official file and data system.
- 1.5.6 Debarment—A legal process: Restrict a recipient from receiving a grant or an award in the future from any agency based on the applicant's history of misuse of previously awarded money.
 - 1.5.6.1 Investigate Recipient—May be based on convictions, civil judgments or fact based

cases involving environmental crimes, contract fraud, embezzlement, theft, forgery, bribery, poor performance, non-performance or false statements as well as other causes.

- 1.5.6.2 Make Legal Determination—Determine if the company or individual is suspended - a temporary action which may last up to one year - or is debarred - the imposition of a set period of time decided on a case by case basis - or is given statutory debarment - occurs by operation of law following criminal conviction under Clean Water Act and Clean Air Act.
- 1.5.7 Track Warrants and Certifications—Track warrants for Contracting personnel at all locations. Track grant Project Officer certifications. Warrants for Contracting Officers and On-Scene Coordinators (Superfund). Track system function against job position to determine authorization to perform specified procedure.
- 1.5.8 Reporting—This includes both external reporting to other government agencies and the public as well as EPA internal management reporting. Analysis or listings of grant, contract or interagency agreement data developed to report activity, evaluate program performance, track workload or to serve as the basis for management decisions.
- 1.5.8.1 External Reporting—Provide external reporting, e.g. Federal Procurement Data System (GSA), Past Performance Tracking System (NIH), Government Accounting Office.
- 1.5.8.2 Internal Reporting—Provide internal reporting, e.g. Federal Procurement Data System (GSA), Past Performance Tracking System (NIH), Program Office Reports, Acquisition Management reports, Office of Inspector General Reports.

2.8 Data Architecture

The Data Architecture describes the information EPA needs to provide administrative services to the agency and characterizes the relationships between EPA's administrative functions and data. The Data Architecture consists of commonly defined and accepted definitions of the information used by the Agency. It defines information independent of who produces it, when it is produced, where it is physically kept, in what form it is kept in (electronic or hard copy), or how it is transmitted.

The first view taken of the Data Architecture is a look at the administrative data that the EPA maintains. This data has been categorized into Information Classes. An information class is a grouping of related data of interest to the enterprise. An Information Class model is useful in that it summarizes and simplifies the complex environment in which EPA operates. Figures 10-20 show the 65 Administrative Information Classes defined for EPA.

2.8.1 Information Class Models

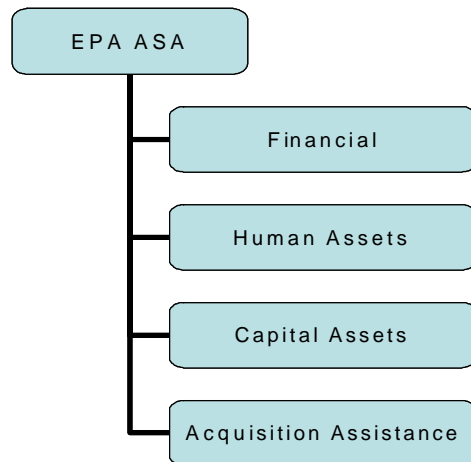


Figure 2-8. EPA ASA Information Class Model - Level 1

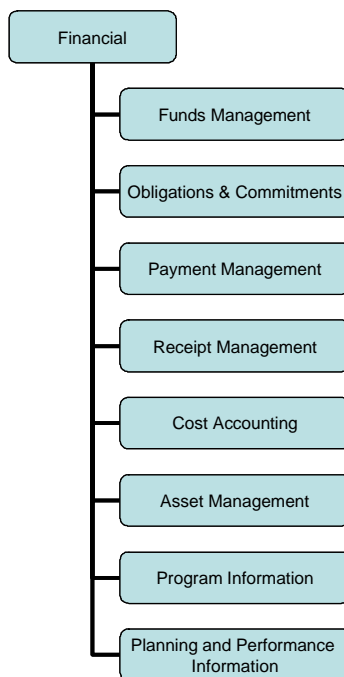


Figure 2-9. EPA ASA Information Class Model - Level 2 - Financial

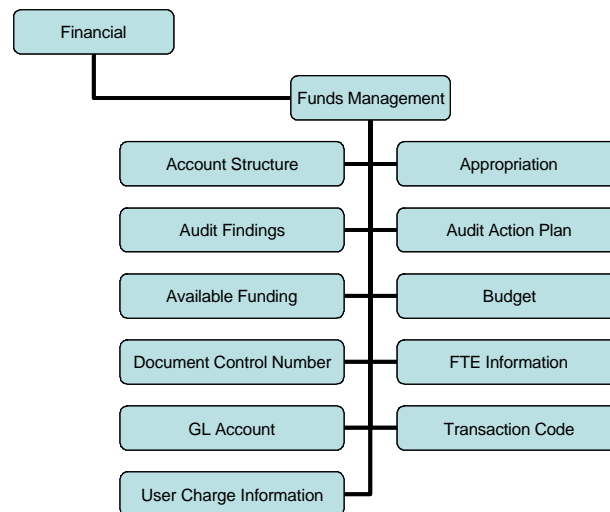


Figure 2-10. EPA ASA Information Class Model - Level 3 - Financial/Funds Management

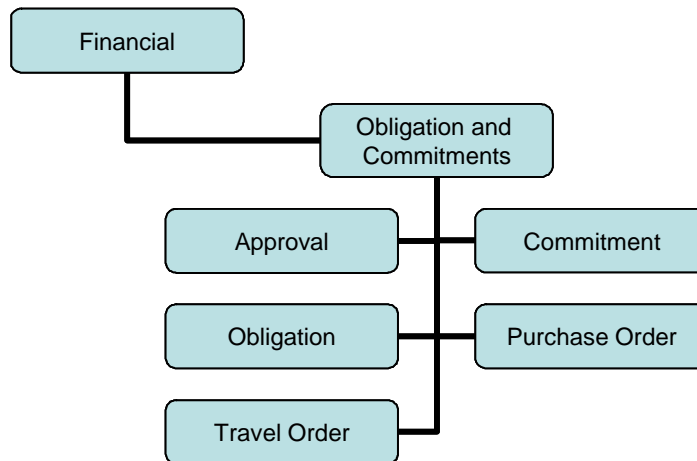


Figure 2-11. EPA ASA Information Class Model - Level 3 - Financial/Obligation and Commitments

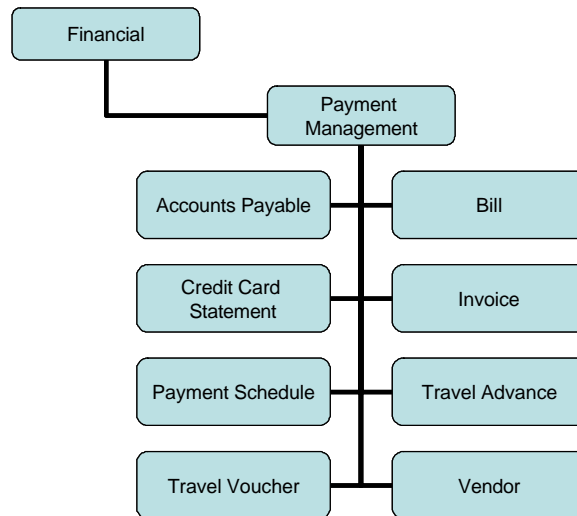


Figure 2-12. EPA ASA Information Class Model - Level 3 - Financial/Payment Management

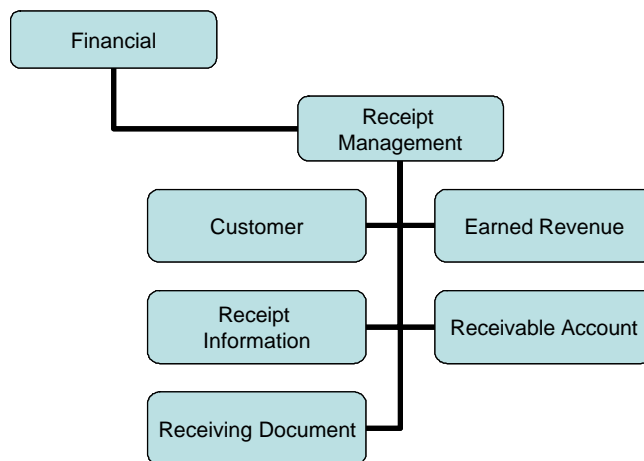


Figure 2-13. EPA ASA Information Class Model - Level 3 - Financial/Receipt Management

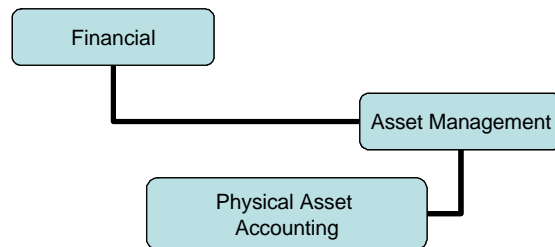


Figure 2-14. EPA ASA Information Class Model - Level 3 - Financial/Asset

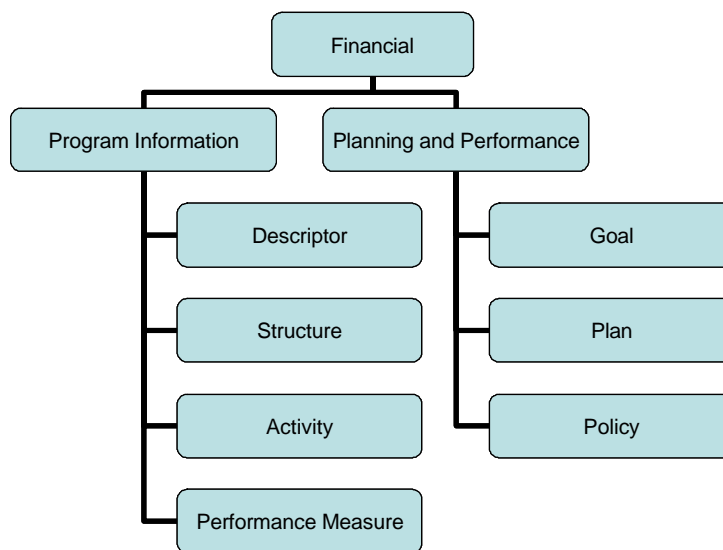


Figure 2-15. EPA ASA Information Class Model - Level 3 - Financial/Program, Planning and Performance

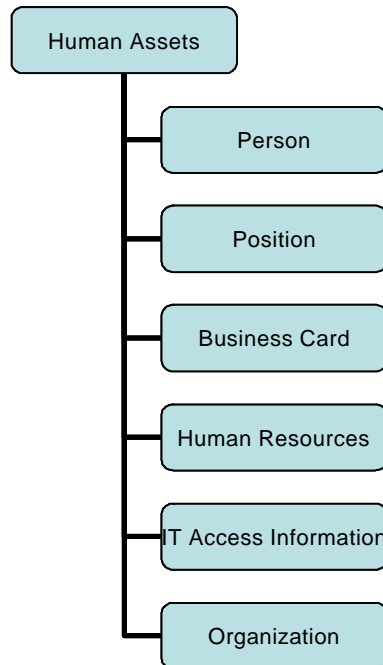


Figure 2-16. EPA ASA Information Class Model - Level 2 - Human Assets

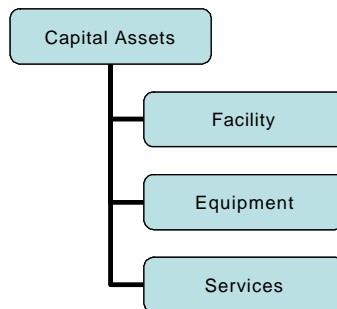


Figure 2-17. EPA ASA Information Class Model - Level 2 - Capital Assets

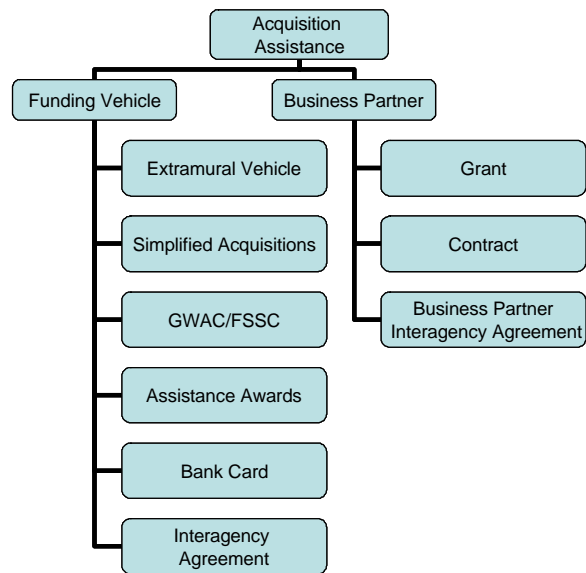


Figure 2-18. EPA ASA Information Class Model - Level 2 - Acquisition Assistance

2.8.2 Information Class Definitions

- 1.0 Financial–Scope: Agency information collected for determining expenditures.
- 1.1 Funds Management–Definition: Funds Management activities capture the highest level of financial data and summarizes and maintains account balances by fund structure. Funds Management is also the primary tool for carrying out the Agency responsibility of establishing a system and maintaining official records for ensuring that it does not obligate or disburse funds in excess of those appropriated and/or authorized. Information captures processes involved with Funds Management include budget preparation, budget formulation, funds allocation, budget execution and funds control.

Examples: Annual Financial Statements, General Ledger, Congressional Justification, Operating Plan.

- 1.1.1 Account Structure–Definition: A string of data elements used for the accurate classification and reporting of the effects of financial transactions. In EPA, this consists of a budget fiscal year, fund code, organization funding the transaction, the program (PRC), and codes used for cost accounting for some funds and organizations.
- 1.1.2 Appropriation–Definition: An act of Congress that enables Federal agencies to spend funds for specific purposes.
- 1.1.3 Audit Findings–Definition: Auditor opinions and related reportable findings of the audit process regarding the state of accounts, internal and management controls, and financial systems of the audited organization.
- 1.1.4 Audit Action Plan–Definition: Formal or informal response to findings resulting from the audit, inquiry, or other review.
- 1.1.5 Available Funding–Definition: The balance of funding available at a specific time for a specific requirement.
- 1.1.6 Budget–Definition: An itemized listing of the amounts authorized to an organizational level of the Agency. In EPA, this may be at the RPIO, allowance holder, operating plan, or sub-allowance levels.
- 1.1.7 Document Control Number–Definition: A code assigned within the Program Offices to track the initial event in the spending chain and, through linkages, to subsequent accounting events.
- 1.1.8 FTE Information–Definition: Data on actual or accrued time incurred by employees

expressed in either hours or full time equivalents of a yearly work schedule. The BUDGET will include amounts for authorized FTEs.

- 1.1.9 GL Account–Definition: A record of financial transactions including journals and trial balance. Includes the special attributes identified within the structure to report data required by external parties.
- 1.1.10 Transaction Code–Definition: An abbreviated format for the designation of the specific general ledger accounts to be impacted by a transaction. Based upon the fund indicator in the ACCOUNT STRUCTURE, different general ledger impacts can be produced based upon a common input by the user.
- 1.1.11 User Charge Information–Definition: Information on credit card charges received from authorized users to review the credit card statement and to allocate charges using the ACCOUNT STRUCTURE.
- 1.2 Obligations and Commitments–Definition: Obligations reflect amounts of orders placed, contracts awarded, services received, and similar transactions during a given period that will require payments during the same or a future period. Such amounts will include outlays for which obligations have not been previously recorded and will reflect adjustments for differences between obligations previously recorded and actual outlays to liquidate those obligations.

A commitment is an administrative reservation of an allotment or of other funds in anticipation of their obligation.

Examples: Contracts, Service Agreements, etc.

- 1.2.1 Approval–Definition: An action that prevents further changes from being made to a transaction. This may be the locking of a file from further changes, an electronic signature, or the transmittal of a data file.
- 1.2.2 Commitment (RQ)–Definition: A reservation of funds for anticipated obligations. Includes the actions to liquidate this reservation through referencing of the subsequent transaction in the spending chain.
- 1.2.3 Obligation–Definition: An established order for goods/services to be delivered at a future time. Includes the process to track the status of the obligation from inception through final payment or adjustment. Specific types of obligations are CONTRACT, PURCHASE ORDER, TRAVEL ORDER.
- 1.2.4 Purchase Order–Definition: The final version of the purchase documentation which reflects the goods or services to be acquired, vendor/vehicle decisions, confirmation of

available funds, and the approval of appropriate authority. Serves as the authority to initiate the recording of funds obligated.

- 1.2.5 Travel Order–Definition: An obligation document for travel to be incurred.
- 1.3 Payment Management–Definition: The Payment Management function provides data and appropriate control over all payments made by or on behalf of the agency. EPA makes payments, for example, to vendors in accordance with contracts; to state governments under a variety of programs; to employees for salaries and expense reimbursements; to other Federal agencies for reimbursable work performed; to individual citizens receiving Federal benefits; and to recipients of Federal loans. Payments to vendors, state governments, employees, other federal agencies, individual citizens, and federal loan recipients.

Examples: Earnings and Leave Statements, Disbursement Reports, etc.

- 1.3.1 Accounts Payable–Definition: An amount due and payable by EPA for a valid liability.
- 1.3.2 Bill–Definition: Notification/request for payment with itemized charges and account information.
- 1.3.3 Credit Card Statement–Definition: Statement provided by a credit card vendor detailing charges processed on behalf of the card holders to include information on associated payee, item, and other data necessary to identify the charges. The actions to relate the charges to the account structure are included under USER CHARGE INFO.
- 1.3.4 Invoice–Definition: Internal or external request for payment by a vendor for goods or services delivered to the Agency.
- 1.3.5 Payment Schedule/Info–Definition: Schedule of check and EFT payments submitted to Treasury for disbursement on behalf of EPA. This includes all associated information on the payments such as check number, confirmation data.
- 1.3.6 Travel Advance–Definition: A payment for travel expenses prior to the actual travel occurring.
- 1.3.7 Travel Voucher–Definition: The documentation presented by an employee requesting payment of travel expenses and itemizing travel charges incurred.
- 1.3.8 Vendor–Definition: Outside parties being paid by EPA including grantees and other Federal agencies.
- 1.4 Receipt Management–Definition: Receipt Management encompasses activities and the management of data that includes recording agency cash receipts and servicing and collecting

receivables. A record of receivables are established to account for amounts due from others as the result of performance of services by the agency, delivery of goods sold, the passage of time (e.g., interest earned), or other actions. Processes included in the receipt management function provide a record of data for the establishment of receivables, the management of receivables, collections and offset processes.

Examples: Collection Reports, Cash Receipts, etc.

- 1.4.1 Customer–Definition: One that purchases a good or service from EPA and owes EPA money.
- 1.4.2 Earned Revenue–Definition: Income realized by the provisioning of goods and services for businesslike activities such as the Working Capital Fund.
- 1.4.3 Receipt Information–Definition: Information from the debtor or other party relating to the collection of funds due. This could be a liquidation of a bill or the receipt of earned or advanced revenue.
- 1.4.4 Receivable Account–Definition: An account or record used to track the amounts owed to EPA for goods or services provided to customers. Includes follow-up actions to secure the collection of the amounts due. The initial and subsequent document to obtain the funds is the BILL with EARNED REVENUE representing the collection of the receivable.
- 1.4.5 Receiving Document–Definition: Documentation providing information to confirm the receipt of goods and services.
- 1.5 Cost Accounting–Definition: The Cost Accounting function provides data that measures the total cost of EPA programs, and their various elements, activities and outputs. Cost Accounting provides accurate program management information, performance measures, and financial statements with verifiable reporting of the cost of activities. The term “cost” refers to the monetary value of resources used or sacrificed or liabilities incurred to achieve and objective, such as to acquire or produce a good or to perform an activity or service. A “cost object” is any activity, output or item whose cost is to be measured. Cost Management processes include data on cost setup and accumulation, cost recognition, cost distribution, and working capital and revolving fund.

Examples: Superfund cost recovery documentation, indirect cost allocations, cost distribution accounts, labor distribution accounts

- 1.6 Asset Management–Definition: The management of assets assures that all property, plant and equipment that is likely to have future financial benefits will have its costs measured reliably. Asset Management consists of the valuation of, capital equipment, items pledged as security, historical cost amounts of revalued assets, changes in revaluation surplus and

depreciation.

Examples: Capital Asset Inventory

- 1.6.1 Physical Asset Accounting–Definition: Reviewing and determining asset classification, collecting asset costs, and reviewing/determining the depreciation life and method. Includes the recording of the asset and depreciation into data records as well as the physical inventory count, audit, or physical changes to an asset.
- 1.7 Program Information–Definition: Information about the structure, function, and activities or initiatives within the Agency, is not limited in scope or interest to a single Agency program. The Agency's major programs are run by National Program Managers (NPMs). EPA's accounting structure captures actual expenditures and costs by goal, objective, and sub-objective, NPM, program, and project.
- 1.7.1 Descriptor (Program Title), Authorizing Legislation, CFR (Regulations), Appropriations, Goals and Objectives
- 1.7.2 Structure (Organizational Location, Management, Resource Organization)
- 1.7.3 Activity (Projects, Outcome, Reports and Schedules, Document and Records)–Definition: A specific activity or project as listed in the program and financing schedules of the annual budget of the United States Government.
- 1.7.4 Performance measure–Definition: A performance goal or performance indicator.
- 1.7.5 Performance Tracking–Definition: Examples: Projects
- 1.8 Strategic Planning and Performance Information–Definition: Information about planning and program measurement data collection activities and resulting performance measurement information.
- 1.8.1 Goals–Definition: A goal defines how an agency will carry out its mission over a period of time. Goals are expressed in a manner that allows a future assessment to be made of whether the goal was or is being achieved. The goal may be of a programmatic, policy, or management nature.
- 1.8.2 Plans–Definition: A detailed formulation of a program of action.
- 1.8.2.1 Strategic Plan–A narrative depicting the future mission of the Agency and strategies to achieve the mission.
- 1.8.2.2 Annual Performance Plan–Definition: The annual plan sets out measurable goals that define what will be accomplished during a fiscal year. The goals should represent a level of

accomplishment commensurate with the resources requested and subsequently funded.

- 1.8.3 Policies–Definition: A defined course or method of action to guide and determine decisions Other Examples (Mission and Vision Statements, Performance Goals, Objectives, Program Evaluations, Performance Indicators)
- 2.0 Human Assets–Scope: Information associated with EPA positions and EPA and non-EPA employees.
- 2.1 Person–Definition: Information that establishes the personal identity of an EPA or non-EPA employee. Also includes the discretionary personal information provided by EPA employees and other users of Agency resources.

Examples: Name, Address, SSN, Phone, Education Level, Age, Marital Status, Emergency Contacts, Licenses, Height, Weight, Sex, and Race.

- 2.1.1 Employee–Definition: Strictly a person being paid a salary by EPA.
- 2.2 Position–Definition: Information that distinguishes a position or class of positions and corresponding reporting relationships.

Example: Title, Series, Grade, Organization Code, Duty Station, Position Number, Bargaining Unit

- 2.3 Business Card–Definition: Information used to locate or describe an EPA or non-EPA employee. Includes all the information customarily included on a business card.

Example: Job title, organization, business address, e-mail address, business telephone numbers, employee ID.

- 2.4 Human Resources (HR)–Definition: Information required to support Human Resources business processes. Certifications, Performance, Awards, Competencies, Service Computation Date, Leave Category, and Veteran's Preference.
- 2.5 Information Technology Access Information–Definition: Information used to determine an EPA or non-EPA employee's right to access Agency network and computing resources. Examples: User Class, Organizational Role, and User ID.
- 2.6 Organization–Definition: An administrative and functional structure designed to achieve or support achievement of specified goals and objectives. EPA's headquarters program offices, 10 regional offices, and 17 labs across the country. The Administrator, who is appointed by the President of the United States, leads EPA. EPA's account structure classifications summarize the Agency's organizational structure.

Examples: Functional Statements, Organizational Charts, Staffing Patterns, Delegations of Authority.

- 3.0 Capital Assets (Property) & Services–Scope: Information pertaining to the tracking of EPA's physical assets to include information on assets, location, property number, serial number, maintenance record, and owner.
- 3.1 EPA Facility–Definition: Information in regard to the tracking of EPA's facility assets. This would include information on the facility's real estate, equipment and other fixed/high value/controlled assets such as location, square footage, lease information, problems, costs, floor plans, amenities available, maintenance records, accountable property and environmental characteristics.

Examples: Building Alteration Information, Information on Facility Leases, EPA Facility Locations, Information on Facilities (square footage, floor plans, FTE), B&F Submissions, Training Site Information, Building Trouble Call Information (hot/cold, bugs, etc.), Information on Physical Security, Usage/Reservations/Scheduling, Local Security Devices, Safety and Health Facility Audit Findings.

- 3.2 Equipment–Definition: Information pertaining to the tracking of EPA's physical assets. Would include information on assets, where they are located, property number, serial number, maintenance associated, and owner.

Examples: U-Drive Vehicle, Audio Visual Loans, Capital Equipment, Headquarters Shared Photocopier (maintenance, supplies, etc.), Headquarters Vehicle Fleet, Warehouse Property, Property Disposal, Request for Shipping, Systems Inventory, and Reservation/Scheduling logs.

- 3.3 Services–Definition: Information created in generating and approving a request for service, major steps in performing services, and verification of dates of completion and acceptance. Subclasses: Services Requested, Services Tracked
- 4.0 Acquisition/Assistance–Scope: Awardee information, contracts, grants, interagency agreement awards, grant guidance, and grant application information.
- 4.1 Funding Vehicle–Definition: Information should include contracting/grants/interagency agreement number, recipient, contractor/grantee/federal agency, dollar amount, date of award, performance period, authorities, budget codes including GPRA Goal codes, project officer (EPA), program office, project manager, contractor/grantee/federal agency, grants/contract specialist, Contracting Officer, award official (grants), contracting/grants/interagency agreement location and description of project.
- 4.1.1 Extramural Vehicle

- 4.1.2 Simplified Acquisitions
- 4.1.3 Government-Wide Acquisition Contracts (GWAC)/ Federal Supply Schedule (FSSC) Contracts
- 4.1.4 Assistance Awards
- 4.1.5 Bank Card
- 4.1.6 Interagency Agreement–Subclasses: Extramural, Contract, GWAC/GSA, Grant, Interagency Agreement.

Examples: Extramural Vehicles, Simplified Acquisitions, Government-Wide Acquisition Contracts (GWAC)/GSA Federal Supply Schedule (FSSC) Contracts, Assistance Awards, Bank Cards

- 4.2 Business Partner–Definition: Organizations that receive of grants, and signatories of contracts and inter-agency agreements
- 4.2.1 Grant–Definition: A financial assistance instrument which provides money and/or direct assistance to the recipient to carry out a public purpose instead of acquiring property or services for the Federal governments own use. Includes cooperative assistance agreements in which the Agency's participation and direction level is increased.
- 4.2.2 Contract–Definition: A mutually binding legal agreement between two or more persons or parties: especially one legally enforceable, a business arrangement for the supply of goods or services, or a document describing the terms of the agreement.
- 4.2.3 Business Partner Interagency Agreement–Definition: Federal agency information identifies the agency name, address, telephone number and payment information as well as information on the organization conducting the work if it is other than the federal agency (i.e. a contractor).

Examples (Business Partner Grant, Business Partner Contract, Business Partner Interagency Agreement)

2.9 Business and Data Interaction

The purpose of this section is to describe the interaction between the business architecture defined in sections 2.6 and 2.7, and the information classes defined in section 2.8. In this baseline architecture, two views of this interaction are provided: a high level view showing the information

exchanged between nodes (organizations), and a detailed CRUD matrix showing the information classes that are created, read, updated, and deleted by each business process.

2.9.1 Node Connectivity (OV-2)

The main features of the OV-2 are the operation nodes and elements, the need-lines between them, and the characteristics of information exchanged. An arrow that indicates the direction of the information flow represents each information exchange and information's characteristics are described. The information illustrated in the OV-2 can be used to facilitate discussions related to the interactions between EPA organizations, and as a basis for determining data stewardship.

The Node Connectivity Diagram is located in Appendix A

2.9.2 CRUD Matrix Overview

The CRUD matrix indicates whether a business process creates (C), reads (R), updates (U), or deletes (D) an Information Object. This Enterprise Architecture (EA) product is highly useful in identifying issues and opportunities associated with the as-is environment. Most importantly, the CRUD matrix identifies redundant creation of information classes by revealing the various independent business processes that create these information classes. Issues of organizational accountability, data standardization, redundant processing of information, and opportunities for process re-engineering and data sharing are highlighted by analysis of the CRUD matrix.

The ASA CRUD matrix is located in Appendix B.

2.9.3 CRUD Matrix Analysis

Table 2-2 is derived from the information contained in this CRUD matrix, and counts the number of ASA business processes that create, read, update, or delete each information class. The higher the count for the number of processes that create any given information class, the greater the indication of potential redundant data creation, and the greater the potential opportunity to streamline for ASA to realize efficiencies. While it is often the case that specific business processes will actually create different specific data elements that fall within the same class, the CRUD matrix provides a highly useful focus for further analysis.

Table 2-2. CRUD Matrix Summary

	C	R	U	D
Information Classes				
1.0 FINANCIAL				
1.1 Funds Management	4	19	26	
1.1.1 Account Structure	1	8		
1.1.2 Appropriation	1	7		
1.1.3 Audit Findings		6		
1.1.4 Audit Action Plan	1	4		
1.1.5 Available Funding	2	4		
1.1.6 Budget	2	3		
1.1.7 Document Control Number	1	3		
1.1.8 FTE Information		4		
1.1.9 GL Account	1	1		
1.1.10 Transaction Code	5	1		
1.1.11 User Charge Information		4		
1.2 Obligations and Commitments	21	18	24	7
1.2.1 Approval	8	1		
1.2.2 Commitment (RQ)	1	2		
1.2.3 Obligation		4		
1.2.4 Purchase Order		5		
1.2.5 Travel Order		4		
1.3 Payment Management	3	9	5	
1.3.1 Accounts Payable				
	C	R	U	D
Information Classes				
1.0 FINANCIAL				
1.3.2 Bill	1	3		
1.3.3 Credit Card Statement		1		
1.3.4 Invoice		3		
1.3.5 Payment Schedule/Info	1	3		
1.3.6 Travel Advance		2		
1.3.7 Travel Voucher		5		
1.3.8 Vendor	1	2		
1.4 Receipt Management	2	5	3	
1.4.1 Customer	1	1		
1.4.2 Earned Revenue	1	5		
1.4.3 Receipt Information	1	2		
1.4.4 Receivable Account	2	2		
1.4.5 Receiving Document		4		

1.5 Cost Accounting	6	12	10	
1.6 Asset Management	2	12	12	
1.6.1 Physical Asset Accounting	1	3		
1.7 Program Information				
1.7.1 Descriptor	5	18	3	
1.7.2 Structure	3	15	6	
1.7.3 Activity	11	18	17	6
1.7.4 Measurement	10	19	17	6
1.8 Planning and Performance				
1.8.1 Goals	2	18	10	2
1.8.2 Plans	8	25	15	3
1.8.2.1 Strategic Plan	2	7		
1.8.3 Policies	6	22	8	4
2.0 HUMAN ASSETS				
2.1 Person	6	34	9	4
2.2 Position	8	33	9	6
2.3 Business Card	5	33	4	3
2.4 HR	18	12	16	16
2.5 IT Access Information	11	13	11	10
2.6 Organization	3	27	8	
	C	R	U	D
Information Classes				
1.0 FINANCIAL				
3.0 CAPITAL ASSETS (Property) & SERVICES				
3.1 EPA Facility	2	15	8	1
3.2 Equipment	9	15	11	3
3.3 Services	6	20	12	10
4.0 ACQUISITION/ASSISTANCE				
4.1 Funding Vehicle				
4.1.1 Extramural Vehicles			8	
4.1.2 Simplified Acquisition	11	13	19	11
4.1.3 GWAC/GSA	11	13	19	11
4.1.4 Assistance Awards	7	17	25	6
4.1.5 Bank Card	11	13	19	11
4.1.6 Interagency Agreements	13	14	20	13
4.2 Business Partner				
4.2.1 Business Partner Grant	6	11	17	6
4.2.2 Business Partner Contract	11	14	18	11

4.2.3 Business Partner Interagency Agreement	13	14	18	13
Total:	272	897	1304	1467

A quick look at the information contained in Table 2-3 reveals several potential problem areas. For the purposes of analyzing the ASA baseline information, we have listed those 20% of the information classes that are created by the most business processes, listing these information classes in descending order with the most potentially problematic at the top.

Table 2-3—CRUD Matrix Summary Highlights

Information Classes	Number of Business Processes Creating Info Classes
1.2 Obligations and Commitments (amounts of orders placed, contracts awarded, services received, and similar transactions during a given period that will require payments during the same or a future period.)	21
2.4 HR (Human Resources - Information required to support Human Resources business processes)	18
4.1.6 Interagency Agreements (Examples: Extramural Vehicles, Simplified Acquisitions, Government-Wide Acquisition Contracts (GWAC)/GSA Federal Supply Schedule (FSSC) Contracts, Assistance Awards, Bank Cards)	13
4.2.3 Business Partner Interagency Agreements (agency name, address, telephone number and payment information, information on the organization conducting the work (i.e. a contractor).	13
2.5 IT Access Information (Information used to determine an EPA or non-EPA employee's right to access Agency network and computing resources.)	11
1.7.3 Program Activity (Projects, Outcome, Reports and Schedules, Document and Records)	11
4.1.2 Simplified Acquisition	11
4.1.3 GWAC/GSA (Government-Wide Acquisition Contracts/General Services Administration)	11

Information Classes	Number of Business Processes Creating Info Classes
4.1.5 Bank Card (Pertaining to Bank Card System known as BankCard)	11
4.2.2 Business Partner Contract (A mutually binding legal agreement between two or more persons or parties)	11
1.7.4 Measurement (Performance Measure – a performance goal or performance indicator)	10
1.2.1 Approval of Financial Transactions (action that prevents further changes from being made to a transaction)	8
2.2 Position (Information that distinguishes a position or class of positions and corresponding reporting relationships. Examples include: Title, Series, Grade, Organization Code, Duty Station, Position Number, Bargaining Unit)	8
4.2.2 Plans (detailed formulation of a program of action)	8

These 20% most problematic information classes that are created by multiple distinct business processes fall into a few well-defined categories, and are mostly grouped within a single information class within these categories:

- Financial Information - Obligations and Commitments (1.2, 1.2.1)
- Acquisition Information - Funding Vehicle (5.1.6, 5.2.3, 5.1.2, 5.1.3, 5.1.5, 5.2.2)
- Human Resource Information (2.2, 2.4, 2.5)
- Program Planning and Performance Information (1.7.3,1.7.4)

2.10 Application Architecture

The Applications Architecture details the automated systems used by EPA to perform administrative services, as well as the automated interfaces that transfer data between these systems, and the information classes that are used by these systems. This layer of the architecture also details the relationship between the 69 applications and the information objects involved with these applications. The application architecture also presents the interfaces between these 69 applications and the other systems within the ASA segment.

The Application Architecture describes the automated applications that create or manipulate data to support EPA's administrative functions. EPA defined the scope of the administrative system

assessment projects to include the 69 systems that are managed under the OARM, OCFO, and OEI. Other systems managed by these organizations are not part of the ASA.

2.10.1 ASA Baseline Applications Inventory

Table 2-4 lists EPA's current applications (level 1 and 2) that are used for administrative purposes. Important attributes for these applications including descriptions and ownership are provided.

Table 2-4. Baseline EPA Systems List

FUNCTIONAL DOMAIN (NODE)	ACRONYM	DESCRIPTION
OCFO	ARTS	Asbestos Receivable Tracking System
	BAS	Budget Automation System
	BankCard	Bank Card System
	CPARS	Combined Payroll Redistribution Systems
	EmpX	Employee Express
	EPAYS	EPA Payroll and Personnel System
	ETS	Electronic Time Sheet
	FDW	Financial Data Warehouse
	IFMS	Integrated Financial Management System
	IVR	Interactive Voice Response
	MARS	IFMS Reporting System (IFMS subsystem)
	MATS	Management Audit Tracking System
	PERS	Performance and Environmental Results
	PPRS	Personnel & Payroll Reporting System
	PRS	Payroll Replacement System
	SCORPIOS	Package Image and Online System
	SPITS	Small Purchase Information Tracking System
	TAPP	Personnel System (EPAYS subsystem)
	TM+	Travel Manager Plus
	WOS	Working Capital Fund Operations System
OARM	HR-Pro	Human Resources Management System
	IMMS	Information Mail Management System
	CDOTS	Contracts Delivery Order Tracking System
	GICS	Grant Information and Control System
	ICMS	Integrated Contacts Management System
	IGMS	Integrated Grants Management System
	POI	Program Office Interface (ICMS subsystem)
	SPEDI	Small Purchase Electronic Data Interchange

FUNCTIONAL DOMAIN (NODE)	ACRONYM	DESCRIPTION
OEI	EPOCH	Audit Tracker
	FRED	Facilities Real Estate Database
	PMMS	Postal Mail Management System
	SECURITY SYSTEM	The Security System
	CMTS	Critical Mail Tracking System
	PARKING	Parking System
	TSS	Transit Subsidy System
	EDIRECTORY NDS	eDirectory (Novell Directory Services)
	NOTES NAB	Notes Mail Directory (EPA Address Book)
	TSSMS	Time Sharing Services Management System
	REMEDY	Problem Resolution Tracking System

FUNCTIONAL DOMAIN (NODE)	ACRONYM	DESCRIPTION
OTHER	LOCATOR VB	EPA National Personnel Locator (VB)
	LOCATOR Internet	Internet Locator
	LOCATOR Intranet	Intranet Locator
	INTRANET	EPA agency wide Intranet - EPA@Work
	IGOR	Inspector General Operation and Reporting
	OMIS	ORD Management Information System
	ENVIROFACTS	External System
EPA External	FEDBIZOPS	Federal Business Opportunities (GSA)
	FPDS	Federal Procurement Data System
	EZHIRE	External HR System

2.10.2 Application/Information Class Matrix

This matrix is a useful subset of the OV-3 (described in section 2.9.5), focusing only on the relationships of applications to information classes. By linking applications to Information Classes, the Enterprise Architecture (EA) provides a high-level view of the type and amount of automation supporting specific segments of EPA's business. The linkages facilitate the identification of application redundancy. The Application/Information Class matrix indicates whether an application creates an Information Class ("C") indicates that the Information Object is created, updated or deleted by the application) or simply uses/references the Information Object (as indicated by the "R"). Highlighted Data Classes are created by multiple applications, indicating potential data quality concerns.

The Application/Information Class Matrix is located in Appendix C.

2.10.3 Application/Information Class Matrix Analysis

The following table is derived from the information contained in the Application/Information Class matrix, and counts the number of ASA applications that create or read each information class. The higher the count for the number applications that create any given information class, the greater the indication of potential redundant data creation and storage, and the greater the potential opportunity to streamline and ASA and realize efficiencies. While it is often the case that specific applications will actually create different specific data elements that fall within the same information class, the Application/Information Class matrix provides a highly useful focus for further analysis.

Table 2-5. Application/Information Class Matrix Highlights

Information Classes	Number of Applications Creating Info Classes
2.1 Person (Information that establishes the personal identity of an EPA or non-EPA employee.)	18
1.7 Program (structure, function, and activities or initiatives within the Agency)	12
2.3 Business Card (Information used to locate or describe an EPA or non-EPA employee)	11
1.3 Payment Management (data and appropriate control over all payments made by or on behalf of the agency).	10
1.5 Cost Accounting (provides data that measures the total cost of EPA programs, and their various elements, activities and outputs.)	10
5.1 Funding Vehicle (contracting/grants/interagency agreement number, recipient, contractor/grantee/federal agency, dollar amount, date of award, performance period, authorities, budget codes, etc)	8
1.1 Funds Management (captures the highest level of financial data and summarizes and maintains account balances by fund structure.)	7
2.2 Position (Information that distinguishes a position or class of positions and corresponding reporting relationships)	7
2.6 Organization (An administrative and functional structure designed to achieve or support achievement of specified goals and objectives)	7
3.2 Equipment (Information pertaining to the tracking of EPA's physical assets)	6
5.2 Business Partner (Organizations that receive grants and signatories of contracts and interagency agreements)	6
1.0 Financial (Agency information collected for determining expenditures)	5
1.2.1 Approval (An action that prevents further changes from being made to a transaction.)	5
1.3.1 Accounts Payable (An amount due and payable by EPA for a valid liability)	4

Information Classes	Number of Applications Creating Info Classes
1.8.1 Goals (agency's mission over a period of time)	4

These 20% most problematic information classes that are created and maintained in separate, distinct applications fall into a few well-defined categories:

- Financial Information (1.0, 1.3, 1.5, 1.2.1, 1.3.1)
- Acquisition Information - Funding Vehicle and Business Partner (5.1, 5.2)
- Human Resource Information (2.1, 2.2, 2.3, 2.6)
- Program, Planning and Performance (1.7, 1.8.1)

2.10.4 System Interface Descriptions (SV-1)

The SV-1 links together the operational and systems architecture views by depicting the assignments of systems and their interfaces to the nodes and need-lines described in the OV-2 and OV-3. The OV-2 description for a given architecture shows operational nodes, while the SV-1 depicts the corresponding system nodes. System nodes include the allocations of specific resources that are being addressed from implementing specific operations. The SV-1 identifies the interfaces between system nodes, between systems, and between the components of a system.

The System Interfaces are diagrammatically depicted, and show both intra-nodal (between systems owned by an organization) and inter-nodal (between systems owned by different organizations) interfaces.

The System Interface Description Diagrams are located in Appendix D.

2.10.5 Operation Information Exchange Matrix (OV-3)

Using the defined activities as a basis, the OV-3 expresses the relationships across the three basic architectural entities (data, processes, systems) with a focus on the specific aspects of the information flow. The OV-3 identifies which applications exchange information with other applications. The OV-3 identifies the elements of information used in support of a particular activity and between two activities. Relevant attributes of the exchange of information are noted. The emphasis of the OV-3 is on the logical and operational characteristics of the information.

The Operational Information Exchange Matrix is located in Appendix E.

2.10.6 Analysis of Application Information Exchange (System Interfaces)

The various organizations, which fall within the purview of the ASA, currently maintain over 100 documented interfaces between the applications that fall within the scope of the ASA. This total

does not include interfaces that are maintained with systems that fall outside the scope of this segment of the architecture.

The greatest number of interfaces maintained (50+), nearly half of all the ASA interfaces, are to and from systems owned by OCFO.

2.11 Technology Architecture

2.11.1 Overview

As the EPA Enterprise Architecture Core Team is assuming responsibility for the EPA Technical Reference Model and overall technical architecture at the EPA, the ASA Technology Architecture is limited to a short review of the database management systems (DBMS), operating systems (OS), and platforms that support the applications that fall within the ASA segment. While incomplete, the following table provides useful insight into some of the technology challenges with the ASA as well as a view of the various DBMS, OS, and platforms that support these applications.

2.11.2 ASA Platforms

To summarize Table 2.6, even with incomplete data, the ASA segment supports the following technology infrastructure at a minimum:

- Eight different DBMS
- Five different OS
- 11 different development environments

Table 2-6. ASA Technology Infrastructure

Application	OS	DBMS	Development Tool	Platform
ICMS	NT 4.0, Novell 4.11	Oracle 8.1.6	Power Builder	IBM X350, Intel
POI	NT 4.0		Lotus Notes 5.06	Intel
SPEDI	NT 4.0, Novell 4.11	Oracle 8.1.6	Developer 2000	IBM X350, Intel
BAS	NT 4.0, OS-390 v2.5.1	Oracle 8.5	Power Builder	
CDOTS		Oracle (Version: TBD)		Intel

Application	OS	DBMS	Development Tool	Platform
ARTS			Visual Basic	
CPS	OS-390 v2.5.1	ADABAS v6.1.3	Natural	
FDW	Unix Version 4.0	Oracle 8.1.6		
IFMS	OS-390 v2.5.1	ADABAS v6.1.3	COBOL, Natural	
IVR		Text File		
MATS	Linux Mandrake	MySQL 3.2.3	Java Script, PHP	
PERS	Novell 4.11	Oracle 8.5	Power Builder	
SCORPIOS	NT 4.0	Oracle 8.1	Power Builder	
SPITS	NT 4.0	Oracle 8.1.6	Oracle Forms	
TM	NT 4.0, Novell 4.11	Oracle 7.3.4	Oracle Forms	
WCF	Novell 4.11	FoxPro 6.0	Acrobat v4.05, Delphi v3.0, Source Safe VB	
PMMS		Delphi		
CMTS		Clipper		Compaq
EPOCH		Focus		Compaq,
FRED		Oracle		Compaq
Parking		Oracle		Compaq
TSS		Oracle		Compaq
The Security System		Oracle		Compaq
IGMS	NT/Domino	Lotus Notes		
REMEDY		Oracle		
IMMS		Clipper		Compaq